

-CURRICULUM VITAE-

NATHANIEL ROSS MILLER

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PERSONAL

Citizenship: United States of America

EDUCATION

Certificate in GIS, School of Social Sciences, University of Texas at Dallas, Richardson, Texas **2002**

Ph.D., Geology, Department of Geosciences, University of Texas at Dallas, Richardson, Texas **1995**
Lithostratigraphic Signal Evaluation of the Miocene Monterey Formation, South Elwood Field, Santa Barbara-Ventura Basin, California (Dissertation); Principal Advisor: Richard M. Mitterer

M.S., Geology, Department of Geology, Bowling Green State University, Bowling Green, Ohio **1985**
Effect of Humic Materials on the Trace Element Chemistry of Ooids (Thesis)

B.A., Geology, Department of Geology, The College of Wooster, Wooster, Ohio **1982**
Corrosion Analysis and Interpretation of Copper and Copper Alloy Artifacts from Tell El Kheleifeh, Jordan (Independent Study)

RESEARCH AND TEACHING EXPERIENCE

Research Scientist – Quadrupole ICP-MS specialist **2008-present**
Jackson School of Geosciences, University of Texas at Austin

I supervise and maintain the Quadrupole ICP-MS laboratory in the Jackson School of Geosciences (JSG). The lab supports research by a wide range of faculty, research scientists and students within the JSG, as well as education of students in both classroom and one-on-one settings in aspects of modern analytical trace element geochemistry. The lab is maintained under positive pressure HEPA-filtered air and supported by a Milli-Q ultrapure water station, a laminar flow bench, and two separate clean laboratories. The lab features an Agilent 7500ce quadrupole ICP-MS with octopole collision/reaction system for removal of polyatomic interferences. Sample introduction systems include: 1) a Micromist nebulizer with a concentric spray chamber for aspirating solutions, and for micro-sampling of solids 2) a NewWave/Merchantek LUV213 nm Nd:YAG laser ablation system and 3) a state-of-the-art New-Wave UP193-FX 193 nm excimer laser ablation system. Lab research web page: <https://webpace.utexas.edu/wg3486/geo-web-folders/miller/QuadICPMSlab/ICP-MS/Home.html>

My personal research pursuits involve diverse topics in global change and sedimentary geochemistry, where I integrate geochemical, isotopic, and GIS data with field geology and petrography. Ongoing research projects include: (1) evaluating Neoproterozoic climate change in Northern Ethiopia and its relationship to the Snowball Earth Hypothesis, (2) deciphering controls of microbial dolomite origin in organic rich depositional settings, and (3) applying isotopic tracers to resolve origins of natural solute contaminants in the Red River system.

Research Geochemist **2007-2008**
Environmental Research Center, University of Missouri at Rolla, Rolla, Missouri
 Supervised trace element and microanalytical laboratory specializing in elemental, isotopic, and ion species determinations in geological, environmental, and industrial materials/fluids. Maintained, optimized, and performed preventative maintenance on: (1) PerkinElmer Elan DRC-e ICP-MS, (2) PerkinElmer Optima 2000 DV ICP-OES, and (3) New Wave Research UP213 laser ablation system, and (4) PerkinElmer HPLC-system. Advised faculty and student researchers regarding sample preparation, method development, QA/QC, analytical measurement and data analysis.

Research Scientist & Lecturer **2001-2006**
Center for Lithospheric Studies, University of Texas at Dallas, Richardson Texas
 Conducted global change and sedimentary geochemical research on funded and independent projects using techniques described above. Taught three core undergraduate courses for Geoscience majors: GEOS 1304 – History of Earth and Life, GEOS 3317 – Water Resources of the Southwest, GEOS 3463 – Sedimentary Petrology (portion of Petrology course), GEOS/GEOG 2302 – The Global Environment.
 Supervised thermal ionization Mass Spectrometry Laboratory (2001-2002), dedicated to precise measurement of radiogenic isotope ratios and elemental concentrations (K, Rb, Sr, Ba, REE, Pb, Th, and U) in terrestrial rocks and fluids. Laboratory featured four solid source magnetic sector mass spectrometers (notably a Finnigan-MAT261 multi-collector) and two clean rooms. Used petrography, microsampling, trace element analysis, mineral-specific leaching, and ion-exchange methods to prepare and evaluate samples. Applications included determining: (1) igneous rock absolute ages using long-lived isotope systems (e.g., Sm-Nd, U-Th-Pb, Rb-Sr), (2) sources of magmas and ore deposits, (3) seawater ⁸⁷Sr/⁸⁶Sr chronostratigraphy from analysis of well preserved marine precipitates, and (4) regional isotopic variations in hydrologic systems.

Research Associate & Lecturer **1996 - 2000**
Department of Geoscience, University of Texas at Dallas, Richardson Texas
 Post-doctoral researcher in strontium isotope chronostratigraphy. Supervised operation of solid source thermal ionization mass spectrometer and clean lab facilities. Generated external funding for facility support through industrial consulting.
 Geoscience Lecturer: IS 4359 - Earthquakes & Volcanoes, an interdisciplinary undergraduate (3-unit) course covering geological, social, and historical aspects of notorious earthquakes and volcanoes, as well as geophysical and geochemical methods for risk analysis and hazard mitigation. NATS 4310 - Advanced Writing in Natural Science and Mathematics, a 3-unit, writing-intensive undergraduate course covering technical writing strategies in manuals, proposals, and scientific papers.

Lecturer in Geoscience **1995 - 1998**
Arts and Sciences Division, El Centro College, Dallas, Texas 1995-1998
Mathematics and Natural Science Division, Richland College, Richardson, Texas 1995-1998
Natural Science Division, Collin County Community College (CCCC), Plano Texas 1996-1997
GEOL 1403 Physical Geology and GEOL 1404 - Historical Geology - introductory lab-based (6-unit) undergraduate courses. Prepared topical lectures and student learning assessments, coordinated weekly laboratory activities, and mentored student exploratory research projects. Revitalized earth science laboratory facilities (CCCC) for improved teaching effectiveness. Heightened earth science awareness in hundreds of students during four years of adjunct teaching.

Research and Teaching Assistant**1991 - 1994**University of Texas at Dallas, Richardson Texas

Investigated hydrocarbon source rock potential of carbonate rocks in relation to organo-carbonate geochemical interactions. Operated and maintained CNS elemental analyzer, gas chromatography, and RockEval pyrolysis instruments. Established clean laboratory facility for preparation of Sr-isotope samples. Served as teaching assistant for undergraduate Oceanography and Physical Geology courses. Established first geoscience student LAN (LocalTalk) network at UTD. Contributed to preparation of TARP grant proposal (funded) for geoscience computer workroom equipment.

Laboratory Assistant**1981 - 1982**Department of Geology, College of Wooster, Wooster Ohio

Instructed, tutored, and monitored students in laboratory portions of undergraduate Physical and Historical Geology courses. Coordinated laboratory exercises, organized physical teaching specimens (minerals, rocks, fossils) and maintained audiovisual support facilities.

INDUSTRY EXPERIENCE**Geochemical Consultant****1996 - 1999**Miller Geological Consulting, Plano, TX

Geochemical consultant specializing in the application of isotope stratigraphy to petroleum exploration and production problems. Operated and maintained double focusing thermal ionization mass spectrometer at University of Texas at Dallas, Center for Lithospheric Studies. Assembled and updated a global Phanerozoic seawater $^{87}\text{Sr}/^{86}\text{Sr}$ evolution data base. Utilized petrography, microsampling, ICP-MS/OES trace element analysis, mineral-specific leaching, and ion-exchange methods to prepare samples for isotopic analysis and evaluate their diagenetic preservation. Authored of more than 25 reports on various domestic and international projects (Alaska, California, New Mexico, Texas, Gulf of Mexico, Indonesia, South America, North Africa, East Africa, and Sakhalin).

Source Rock Geochemical Consultant**1998 - 1999**Mobil Oil Corporation, Dallas, TX: New Business Areas, New Exploration & Producing Ventures.

Researched, compiled, and critically evaluated petroleum source rock data to characterize the risk component of petroleum prospects. Modeled temporal and spatial source rock character to define organic carbon-rich depositional fairways in relation to tectonic and eustatic controls. Compiled source rock statistics for geographic display via GIS.

Developed digital source rock database template; devised time-series sorting systems and expert system algorithms to assess source rock quality. Established comprehensive East African and Circum-South Atlantic source rock databases (>20,000 analyses from 30 basins in 18 countries, >2400 literature references). Constructed predictive source facies maps in a sequence stratigraphic context. Facilitated prospect evaluations in Kenya, Tanzania, Mozambique, Namibia, & Republic of S. Africa.

Geochemical Intern**1997**Mobil Oil Corporation, Dallas, TX: Basin Analysis Group, Mobil Exploration & Producing Technology.

Evaluated extents, processes, and controls of genetically related source rocks throughout the circum-Caribbean region as part of a Global Source Rock-Driven Petroleum Systems study. Assessed temporal variations in source rock character relative to sea level supersequences and tectonic evolution of the Caribbean Plate.

Founded digital database template for systematic compilation of multivariate source rock data. Developed stage-level coding systems for numeric conversion of age terminology and formulated

time-series data capture algorithms. Established a comprehensive Circum-Caribbean source rock database (>9160 analyses from >300 localities in 15 countries). Assisted in the production of predictive time-series maps using GIS/ArcInfo. Evaluated exploration opportunities in Guatemala and Costa Rica.

Research Technologist

1990 - 1991

ARCO Oil & Gas Company, Production & Research Center, Plano, TX: Advanced Analytical Services Group

Prepared and analyzed geological samples by a variety of methods: XRF, XRD (pattern deconvolution, semiquantitative RIR mineralogy, whole rock and clay separates), thermogravimetry, SEM, EPMA, energy dispersive X-ray analysis, and LECO C/S.

Developed a multi-analytical whole rock quantitative mineralogy program in-house X-ray fluorescence (XRF) and TOC/TS analysis. Developed whole rock XRF methods and evaluated QA/QC. Operated and maintained Rigaku-S/MAX XRF spectrometer with DEC Micro PDP-11/23 computer.

Project Geologist

1986 - 1990

ARCO Oil & Gas Company, Production & Research Center, Plano, TX: Reservoir Geology Group

Served as an analytical geochemistry/mineralogy expert for petroleum reservoir characterization projects in Alaska, California, Texas, and Indonesia.

Conducted quantitative pore type geometry study of Lisburne carbonate reservoir (U. Wahoo Fm, Alaska). Integrated SEM pore geometry metrics from pore casts with P&P data from corresponding core plugs. Demonstrated complexity of pore throat networks and practical limitations of inferring relative permeabilities from petrographically defined pore types.

Devised normative calculations to quantify mineralogic compositions of highly gradational Monterey Formation lithologies, facilitate visual core descriptions and improve understanding of log character in relation to mineralogical and petrophysical properties. Received ARCO Vice-Presidents award and invited Fractured Reservoir Workshop lecturer.

Conceived and conducted Sr isotope stratigraphy study of offshore Indonesian wells with poor biostratigraphic age control. Study demonstrated the relationship of Oligo-Miocene eustatic sea level falls to secondary porosity (incipient pay zones) development and the role of major block-bounding faults as petroleum migration (charge) pathways.

Field Geologist in Remote Sensing

1985

ARCO Oil & Gas Company, Production & Research Center, Plano, TX: Strategic Ventures Group

Conducted field experiments to measure solar-stimulated natural fluorescence and spectral absorption characteristics of geologic materials using a prototype Fraunhofer line spectrometer. Conducted spectral studies of hydrocarbon seep surface manifestations (rocks, soils, vegetation) in Texas, Nevada, and Oregon. Streamlined the analytical testing sequence to facilitate systematic evaluation of instrument performance and documented experimental results.

FIELD EXPERIENCE

Neoproterozoic of Norway – Moelv Tillite fieldtrip, Hedmark Basin (Aug, 2008)

Neoproterozoic of Namibia – Otavi and Nama Groups, 2008 excursion

Neoproterozoic of Ethiopia and Saudi Arabia – ancient carbonate and siliciclastic depositional systems in association with Snowball earth climatic extremes.

Neoproterozoic of W. US (Death Valley Area and S. Idaho) – SEPM microbialite fieldtrip; 2009 fieldwork in S. Nopah Ranges

Permian of N. Central Texas – Geology and Hydrogeochemistry of evaporite-influenced watersheds – Upper Red River Basin
Cretaceous of Texas – Carbonate and siliciclastic depositional systems associated with the Western Interior Seaway; Comanchean and Gulfian Series
Ancient carbonate depositional systems: Permian reef complex, Guadeloupe Mountains, West and Central Texas.
Modern carbonate depositional systems: Florida reef/back-reef tract, Bahamian Field Station – San Salvador, Bahamas, Jamaica reef tract.
Neogene California Stratigraphy: numerous Monterey Formation fieldtrips to western Santa Barbara coastal area and San Joaquin Valley
Remote sensing fieldwork in West Texas, Nevada, and Oregon
Geology field camp: four-corner region, Bowling Green State University
Precambrian and Paleozoic geology: fieldtrips in Ohio, West Virginia, Kentucky, and Michigan.
Field archaeologist, Excavation of Pella, Jordan, College of Wooster and University of Sydney, Australia

ANALYTICAL EXPERTISE

ICP-MS: Agilent 7500ce with NewWave UV213 and UV193 (excimer) laser ablation systems. Perkin-Elmer Sciex Elan DRC-e, 6100 DRC. Experienced in instrument optimization (X-Y, autolens calibration, nebulizer gas flow) for trace element analysis of carbonate rocks and waters, REE analyses of carbonates, including detailed correction for high Ba on Eu, and post-analysis data reduction for instrument drift using methods such as internal standardization and polynomial corrections using standards following the method of Cheatham et al. (1993). Experienced in aqueous and rock sample preparation techniques including rock fusion, multi-acid, and microwave digestion.

ICP-OES: Perkin Elmer Optima 2000DV, 3300 DV ICP with ICP WinLab software. Experienced user from sample preparation to method design and post-processing data reduction. Experienced in method optimization for major and minor element analysis of sedimentary rocks and waters.

Mass Spectrometry: Finnigan MAT-261 and Mobil (“Burke curve”) double focusing thermal ionization mass spectrometers; Finnigan Delta-E gas source thermal ionization mass spectrometer; proficient in sample preparation techniques for variety of purposes. Experienced in low-blank elemental extraction techniques (i.e., ion exchange chromatography, spec-resins), especially from chemical sediments (carbonate rocks and evaporates) and waters.

Petrography (transmitted light, SEM): have described 100s of thin sections; experienced with mineral-specific staining techniques and image analysis.

Core Description: have logged more than 1000 feet of Monterey Formation core.

SEM: Hitachi, ISI, JEOL T-300 scanning electron microscopes

TOC/TS: LECO C/S 344 infrared spectrometer; experienced in sample preparation techniques for distinguishing TC, TOC, IC, OS, IS

XRD: Scintag PAD5 x-ray diffractometer and spectral deconvolution software; experience in semiquantitative mineralogy estimation by RIR method.

XRF: Rigaku S/MAX x-ray fluorescence spectrometer; experience in fused disk sample preparation, instrument calibration, and quantitative analysis for major rock forming oxides and common trace elements.

FAAS: Varian and Perkin Elmer 5000 graphite furnace and flame atomic absorption spectrometers

COMPUTER AND LANGUAGE SKILLS

Computers/Software: experienced ESRI GIS user – Arc GIS Desktop, ArcMap, ArcView; PC-Windows and Windows NT; Macintosh OS; DEC Micro PDP 11/23 mainframe; experience in UNIX, vi; Languages (experience in Pascal, Fortran). Proficient in Excel, Access, Word, PowerPoint, KeyNote, scientific plotting (Aabel, Kaleidograph, Deltagraph), graphics (Adobe Illustrator, PageMaker, Canvas, Photoshop), and web design (Dreamweaver MX, iWeb) software.

Languages: scientific literature reading proficiency in French; field experience with Levantine Arabic and Amharic (Ethiopia) cultures.

SHORT COURSES

- Early Career Geosciences Faculty Workshop
- Designing Effective and Innovative Courses in Geosciences (facilitator)
- Kingdom SMT 2D/3Dpak
- GMAPplus LogM: Synthetics, X-sections & Log Modeling
- Interpretation of seismic structure
- Carbonate chemistry and mineralogy
- Monterey core workshop
- Reservoir engineering for geologists
- Ichnology
- Carbonate facies relationships & stratigraphic traps
- Pore level geometry
- Fractured reservoir workshop (invited lecturer)

GRADUATE COURSEWORK

- Geochemistry
- Global Geochemical Cycles
- Organic Geochemistry
- Physical Chemistry
- Sedimentary Geochemistry
- Sedimentary Environments
- Invertebrate Paleontology
- Plate Tectonics
- Carbonates in Space and Time
- Carbonate Sedimentology
- Carbonate Petrology
- Special Topics in Carbonate Geology: Seminar
- Sea Levels and Sedimentation
- Geophysics
- Geophysical Exploration Methods
- Digital Signal Processing (Time-Series Analysis)
- Remote Sensing
- Geologic Computing
- Mineralogy and Petrology
- Geologic Research and Communication
- Instrumental Techniques
- Isotope Geology
- Electron Microscopy
- Geographic Information Systems (GIS)

PROFESSIONAL AFFILIATIONS

GSA - Geological Society of America (since 1995; South-Central Section member)
SEPM - The Society for Sedimentary Geology (since 1985; Pacific Section member)
AGU - American Geophysical Union (since 1987)
AAPG - American Association of Petroleum Geologists (since 1985)

HONORS AND AWARDS

- Invited guest editor for special publication on the Evolution and Mineralization of the Arabian-Nubian Shield (planned for publication in Precambrian Research in 2009/2010).
- Invited keynote speaker for 33rd IGC – Expressions of Neoproterozoic Icehouse Earth in the Arabian-Nubian Shield – Aug 10, 2008, Oslo, Norway.
- Invited participant/speaker for 1st International Snowball Earth Conference – July 2006, Ascona, Switzerland.
- Invited facilitator (2 yrs) for On the Cutting Edge Workshop: Designing Effective and Innovative Courses in the Geosciences (College of the Siskiyous, 2006; Hamilton College, 2007)
- Short Course Exploration Game Winner: Interpretation of Seismic Structure (Mobil Oil Corporation, Summer, 1997)
- Vice Presidents Award (ARCO Production and Research Center, 1988): for contributions to evaluation of the Monterey Formation leading to more intelligent well completions and evaluation of reserves resulting in increased oil production rates.
- American Chemical Society Research Fellowship (University of Texas at Dallas, 1984-1986, 1991)
- Amoco Fellowship in Geology (Bowling Green State University, 1983-1984)
- Outstanding Geology Graduate Student Award (Bowling Green State University, 1984)
- B.A. with honors, Sigma Xi, Marilyn Myers Scholarship, Deans List (College of Wooster, 1978-1982)

FUNDED RESEARCH PROPOSALS (8)

Jackson School of Geosciences (\$18,000 – 3 yrs)	2010-2012
Equipment Matching Funds - Agilent 7500ce ICP-MS service agreement	
Jackson School of Geosciences (\$16,738)	2010-2011
Equipment Matching Funds – GV Isoprobe MC-ICPMS service agreement	
Academy of Mining and Metallurgy (\$54,000 – funded in 2008 after leaving UMR)	2007
Sample preparation laboratory infrastructure improvement	
Department of Geosciences, UT Dallas – (\$12,000)	2005
Digital Photomicroscopy and Microdrilling Workstation	
National Science Foundation (\$27,000)	2004
U.S. – Ethiopian Cooperative Research: Studies of Snowball Earth Sequences in Northern Ethiopia	
Binational Science Foundation (\$150,000)	2003-2006
Search for Neoproterozoic Snowball Earth in the Arabian-Nubian Shield	
ARCO/Mobil Oil Companies	1987-1991
Depositional controls influencing lithostratigraphic variation in the Miocene Monterey Formation. Access to analytical facilities requested in lieu of financial support.	
Sigma Xi	1983
Effect of humic material on the trace element geochemistry of ooids.	

PUBLICATIONS (11)

- Miller, N.R.**, Avigad, D., Stern, R.J. and Beyth, M., *in press for 2011*. The Tambien Group, Northern Ethiopia (Tigre). in E. Arnaud et al. (eds.) *The Geological Record of Neoproterozoic Glaciations, Geological Society of London Memoir*.
- Smith, D.K., Miller, N.R., and Korgel, B.A. 2009. Iodide in CTAB Prevents Gold Nanorod Formation. *Langmuir* 25, 9518-9524.
- Miller, N.R.**, Stern, R.J., Avigad, D., Beyth, M., and Schilman, B., 2009. Neoproterozoic carbonate-slate sequences of the Tambien Group, N. Ethiopia (I): pre-“Sturtian” chemostratigraphy and regional correlation. *Precambrian Research* 170, 129-156.
- Stern, R.J., Avigad, D., **Miller, N.R.**, and Beyth, M., 2008. From Volcanic Winter to Snowball Earth: An alternative explanation for Neoproterozoic Biosphere Stress. Y. Dilek, H. Furnes, K. Muehlenbachs (eds)). *Links Between Geological Processes, Microbial Activities & Evolution of Life. Modern Approaches in Solid Earth Sciences, Vol. 4.*, 313-337. Springer.
- Miller, N.R.**, Johnson, P., and Stern, R.J., 2008. Marine versus non-marine environments for the Jibalah Group, NW Arabian shield: a sedimentologic and geochemical survey and report of possible Metazoa in the Dhiaqa formation. *Arabian Journal of Science and Engineering* (special theme issue: Arabian plate basement rocks and mineral deposits) 33, 55-77.
- Avigad, D., Stern, R.J., Beyth, M., **Miller, N.**, McWilliams, M., 2007, Detrital zircon U–Pb geochronology of Cryogenian diamictites and Lower Paleozoic sandstone in Ethiopia (Tigrai): Age constraints on Neoproterozoic glaciation and crustal evolution of the southern Arabian–Nubian Shield. *Precambrian Research* 154, 88-106.
- Stern, R.J., Avigad, D., **Miller, N.R.**, and Beyth, M., 2006, Geological Society of Africa Presidential Review: Evidence for the Snowball Earth hypothesis in the Arabian-Nubian Shield and the East African orogen. *Journal of African Earth Sciences* 44, 1-20.
- Avigad, D., Sandler, A., Kolodner, K., Stern, R.J., McWilliams, M.O., **Miller, N.**, Beyth, M., 2005, Mass-production of Cambrian quartz-rich sandstone as a consequence of chemical weathering of Pan-African orogens: implications for global environment. *Earth and Planetary Science Letters* 240, 818-826.
- Katz, O., Beyth, M., **Miller, N.**, Stern, R., Avigad, D., Basu, A. and Anbar, A., 2004, A Late Neoproterozoic (~630Ma) high-magnesium andesite suite from southern Israel: implications for the consolidation of Gondwanaland. *Earth and Planetary Science Letters* 6921, 1-16.
- Miller, N.R.**, Alene, M., Sacchi, R. Stern, R.J., Conti, A., Kröner, A., and Zuppi, G., 2003, Significance of the Tambien Group (Tigrai, N. Ethiopia) for Snowball Earth Events in the Arabian-Nubian Shield: *Precambrian Research* 121, 263-283.
- Denison, R.E., **Miller, N.R.**, Scott, R., and Reaser, D., 2003, Strontium isotope stratigraphy of the Comanchean Series in North Texas: *Geological Society of America Bulletin* 115, 669-682.

MANUSCRIPTS IN PREPARATION

Miller, N.R. and Leybourne, M.I., *to be submitted to GCA*. Microbial dolomite as a paleoceanographic archive: Stable isotope ($\delta^{13}\text{C}$, $\delta^{18}\text{O}$) and trace element evidence from a continuous ~14 myr record of the Miocene Monterey Formation, California.

Sun, L., Leybourn, M.I., **Miller, N.R.**, and Denison, R.E., *in revision (Chemical Geology)*. Strontium isotope constraints on solute sources and mixing dynamics in a large impoundment, South-Central USA. *Chemical Geology*.

INDUSTRY PUBLICATIONS (11)

Leybourne, M.I., Cameron, E.M., and Miller, N., 2001, Camiro Deep-Penetrating Geochemistry, Phase II: Composition of groundwaters at the Spence deposit: Part C – Results of 2000 sampling and Sr isotope analyses.

Miller, N.R., 1996-1999, 25 confidential proprietary reports on stable and strontium isotopy as applied to petroleum industry exploration and production projects.

Miller, N.R., 1999, Source rock analysis of the African offshore margin between Walvis Ridge and Agulhas-Falkland fracture zone: Circum South Atlantic Study: Mobil NBA interim report, 10 p.

Miller, N.R., 1999, East Africa Source Rock Study: Mobil NBA report, 27 p., enclosures.

Miller, N.R., 1998, Circum-Caribbean Source Rocks: Mobil MEPTec Basin Analysis/NBA report, 48 p., appendices, enclosures.

Miller, N.R., 1991a, QMAS1: A wavelength-dispersive X-ray fluorescence program for determining quantitative whole rock chemistry: ARCO Technical Memorandum, TM 91-0028, 101 p.

Miller, N.R., 1991b, Stable and strontium isotope analysis of Cretaceous Austin Chalk, East Texas Field: ARCO Technical Service Report, TST 91-0022, 24 p.

Miller, N.R., 1990, LECO CS-344 carbon and sulfur determination of geologic materials: ARCO Technical Memorandum, TM 90-0027, 20 p.

Miller, N.R., 1989, Strontium isotope chronostratigraphy of the Bima Field reservoir, offshore northwest Java Sea: ARCO Research Report, RR89-0018, 133 p.

McGowen, M.K. and Miller, N.R., 1988, Visual core description of State Ames 3242-19 core, South Elwood Field, offshore Santa Barbara, California: ARCO Research Report, RR88-0018, 103 p.

Miller, N.R., 1987, A method for the quantitative determination of mineralogy in the Monterey Formation, ARCO Research Report, RR87-0037, 65 p.

ABSTRACTS (35)

Miller, N.R., 2010. Paleoceanographic significance of deep-sea microbial dolomite – new insights from old “bugs”. American Geophysical Union, Fall Meeting 2010, abstract #xxxxxxx.

Miller, N.R., and Leybourne, M., 2010, Organogenic dolomite as a paleoceanographic archive – Neoproterozoic insights? Geological Society of America Abstracts with Programs 42, XXX.

Miller, N.R., Maupin, C., and Quinn, T., 2009. What do laminar scale chemostratigraphic investigations of Cryogenian cap carbonates reveal about formation? American Geophysical Union, Fall Meeting 2009, abstract #U13A-0048.

Miller, N.R., 2009. Exploring the assembly of Cryogenian cap carbonates – what do composite vs. laminar scale investigations reveal? Geological Society of America Abstracts with Programs 41, 7.

Kaiser, J.F., Hogan, J., and Miller, N., 2009. Constraining the origin of rapakivi feldspars in the Deer Isle Pluton: a window into magma chamber dynamics. Geological Society of America Abstracts with Programs 41, 3.

Doyle, S., Sharp, J.M., and Miller, N.R., 2009. Laser ablation ICP-MS to derive diffusion coefficients in sandstones. Geological Society of America Abstracts with Programs. Geological Society of America Abstracts with Programs 41, 2.

Miller, N.R., 2008. Expressions of Neoproterozoic icehouse earth in the Arabian-Nubian Shield. Invited keynote speaker abstract. 33rd IGC (Oslo), August 2008.

Leybourne, M.I., Cameron, E.M., Rissmann, C.F.W., and Miller, N.R., 2008. Understanding water sources, age and flow paths in hydrochemical exploration: Constraints from stable and radiogenic isotopes in the hyper-arid Atacama Desert, Chile. Eighteenth Annual V.M. Goldschmidt Conference Abstract, A539.

Kaiser, J.F., Hogan, J., and Miller, N., 2008. Constraining the origin of rapakivi feldspars in the Deer Isle Pluton: a window into magma chamber dynamics. Geological Society of America Abstracts with Programs 40, 7.

Miller, N.R., Stern, R.J., Avigad, D. and Beyth, M., 2007. Cryogenian carbonate-slate sequences of the Tambien Group, N. Ethiopia: pre-“Sturtian” chemostratigraphy and regional correlations. Geological Society of America Abstracts with Programs 39, 336.

Miller, N.R., Avigad, D., Beyth, M., Stern, R.J., and Schilman, B., 2007. Neoproterozoic carbonate-slate sequences of the Tambien Group, Tigre, Northern Ethiopia - Chemostratigraphy of Cryogenian metasediments. Israel Geological Society, Annual Meeting, Abstracts p. 79

Stern, R.J., Avigad, D., Miller, N., and Beyth, M., 2006. From Volcanic Winter to Snowball Earth: An alternative cause for Neoproterozoic Biosphere stress. Geological Society of America Abstracts with Programs, 38 (7) 389.

Miller, N.R., Schilman, B., Avigad, D., Stern, R.M., and Beyth, M., 2006. Neoproterozoic Snowball Earth - the Northern Ethiopian record, Snowball Earth Conference 2006 Abstract Volume, July 16-21, 2006, Ascona, Switzerland, 74-75.

Tuck, D., Miller, N., Stern, R., Talbot, J., and Denison, T., 2006, Chasing glaciers: chemical weathering trends in a possible Neoproterozoic glacial sequence from Tigray, N. Ethiopia. Geological Society of America Abstracts with Programs - submitted for South-Central Section-40th Annual Meeting (6-7 March 2006).

- Miller, N., Blake, B., Stern, R., and Johnson, P., 2005, Carbonate chemical and petrographic trends in an Ediacaran? post-amalgamation basin, NW Arabian Shield, Geological Society of America Abstracts with Programs 37 (7) 219.
- Tuck, D., Miller, N., and Stern, R., 2005, Probing the Neoproterozoic hydrological cycle from silicate weathering indices: applications for snowball earth? Geological Society of America Abstracts with Programs 37 (7) 219.
- Friesen, E., Miller, N., Stern, R., Arafat, S., and Abdelsalam, M., 2005, Remote sensing and GIS as a cyberreconnaissance tool in Northern Ethiopia and Southern Eritrea. Geological Society of America Abstracts with Programs 37 (7), 108.
- Mukherjee, S.K., Stern, R.J., Manton, W.I., Johnson, P.R., and Miller, N., 2005, A neodymium perspective for the Neoproterozoic banded iron formations from the Arabian Nubian Shield - A snowball Earth manifestation? Geological Society of America Abstracts with Programs 37 (7), 358.
- Miller, N.R., Avigad, D., Stern, R.J., Beyth, M., Küster, D., Gebresilassie, S., and Mehari, K., 2004, Of Island Arcs and Icebergs? Strontium and Carbon Isotope Stratigraphy of Ethiopian Snowball Earth Sequences. American Geophysical Union, Fall Meeting 2004, abstract #PP33B-0943.
- Miller, N.R., Avigad, D., Stern, R.J., Beyth, M., Küster, D., and Mehari, K., 2004, The Search for Snowball Earth in the Arabian-Nubian Shield: Reconnaissance Geologic Assessment of the Neoproterozoic Tsaliyet and Tambien Groups in Northern Ethiopia, submitted for 20th Colloquium of African Geology, Orléans - France, 02 June - 07 June, 2004.
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